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ABSTRACT

Presented are the results of one university's experience with three different models of determining institutional program costs. The three models discussed are the National Center for Higher Education Information Exchange Procedures (NCHEMS IEP), the Ohio Board of Regents Resource Analysis Procedure, and the Association of American Medical Colleges Cost Study. Traced is the history of the University of Cincinnati's involvement in each of these three cost models. Samples show how one model differs from each of the others. But, it is concluded, that as long as there are so many different cost models, there is little chance that anyone will understand the costs of higher education. There needs to be more cooperation in developing standardized cost methodologies among national associations, state agencies, and institutions. (Author/KE)

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CONFLICT IN COST ANALYSIS

EXPERIENCES WITH THREE DIFFERENT COST MODELS

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May, 1976

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HE008160

Conflict in Cost Analysis
Experiences With Three Different Cost Models

Abstract

This paper will present the results of one university's experience with three different models for determining institutional program costs. The three models to be discussed are the National Center for Higher Education Information Exchange Procedures (NCHEMS IEP), the Ohio Board of Regents Resource Analysis Procedure, and the Association of American Medical Colleges Cost Study.

The University of Cincinnati was one of the few large, complex, research institutions to pilot test the NCHEMS IEP cost methodology. Cincinnati's program costs also are being monitored by the Ohio Board of Regents through the Regents' state wide cost model known as the Resource Analysis Procedure. In addition, cost studies have been conducted at the University of Cincinnati Medical Center utilizing the methodology developed by the Association of American Medical Colleges.

After tracing the history of Cincinnati's involvement in each of these three cost models, sample results will be presented to show how one model differs from each of the others. The good and bad features of each of the models will be discussed and recommendations will be offered on how higher education might improve its credibility for cost finding based on the experiences with these three models.

History

The Information Exchange Procedures (IEP) model developed by the National Center for Higher Education Management Systems (NCHEMS) contains a set of standard definitions and procedures for conducting an institutional cost study. The University of Cincinnati was one of sixty institutions to pilot test these cost procedures in 1973-74.

The Ohio Board of Regents, through its Uniform Information System developed in the mid-sixties, collects standardized information from the twelve state universities in Ohio. In 1967-68 a set of Resource Analysis Procedures (RAP) was developed. RAP uses the data provided by the Uniform Information System to determine the costs by level of instruction and discipline for each of the state universities. These costs are used to develop state budget formulas for higher education appropriations.

The Association of American Medical Colleges (AAMC) has been conducting cost studies at medical centers since 1967. In 1970-71, the University of Cincinnati Medical Center was one of seventeen health centers to conduct a cost study using the AAMC guidelines under the sponsorship of the National Institutes of Health. The results of this study were updated in terms of 1972 dollars and released in 1973 by the AAMC in its report on the costs of undergraduate medical education.

Sample Results

The three cost models can best be understood and compared by looking at the formation in which their results are presented.

Exhibits A-1, A-2, and A-3 relate to the NCHEMS IEP model. In this model direct and full costs are expressed two ways. One way is by

discipline, the other by student major. Exhibit A-1 shows direct and full costs by discipline. (At Cincinnati discipline costs were interpreted to mean college and department costs.) Exhibits A-2 and A-3 summarize costs by student major. A-2 relates only to direct costs while A-3 relates to full costs. Note that the ranking of programs changes in Schedules A-2 and A-3 as a result of the allocation of indirect costs.

Exhibits B-1 and B-2 relate to the Ohio Board of Regents RAP model. B-1 is an overall summary of the cost per 100 FTE students for each of the twelve state universities. RAP further breaks down costs by level and by program to produce a series of cost reports. Levels are expressed in terms of courses, such as General Studies, Technical, Baccalaureate, Masters, Professional, Doctoral and Medical, while programs relate to disciplines such as English, History, Education, Economics, etc. B-2 is an illustration of a cost report for the Baccalaureate level English program. (Similar reports are produced for Masters English and Doctoral English.)

Exhibits C-1 and C-2 are based on the AAMC's cost methodology for medical centers. Costs are reported two different ways. C-1 might best be described as a programmatic financial statement. It compares costs to income by program. C-2 is the more traditional report showing cost per student for each program.

Differences Among the Models

The results from the sample reports illustrate the more obvious differences among the three models. While results from one model alone might be difficult to interpret, it is impossible to compare the results from one model with another (even discounting the fact that the data

are for different years).

The reason why the results cannot be compared is because different methodologies are used to calculate costs in each of the three models. Exhibit D highlights these major differences. As one can see from this exhibit, the output format, the program classification structure, the type of financial data used, the way faculty effort is allocated, the procedures for allocating indirect costs and the inclusion of joint costs, are all handled differently. Because of these major differences, it is virtually impossible to compare the results of one model with another.

Good and Bad Features of the Models

NCHEMS/IEP. The most positive aspect of the IEP model is its national visibility. If a nationwide cost model is ever to be adopted, it most likely will be IEP or some version thereof. There are, however, some major problems with IEP methodology, many of which are currently being addressed by NCHEMS through a special task force. Some of the problems being considered include the following:

Funds Sources. Means have to be developed to identify fund sources in the cost model. Program costs vary considerably among institutions because of private gift, grant or endowment support.

Credit Hours. The semester credit hour is the prescribed medium of reporting costs when IEP is used. Institutions on the Quarter System must convert their credit hour costs to a semester basis. While this may be a simple process, total institutional costs could be fundamentally different under the Quarter System. Moreover, the credit hour is a poor basis for expressing costs for medical students

and students enrolled in programs which require clinical laboratory experience and practice sessions.

Allocation of Indirect Costs. Techniques prescribed by IEP for allocating indirect costs are crude. Direct costs and semester credits are the most frequently recommended parameters for allocating indirect costs. More sophisticated and universally acceptable methodology needs to be developed.

Ohio Board of Regents. This model has been used successfully for almost ten years. RAP is firmly entrenched as the basis for developing budget formulas to fund higher education in the State of Ohio. The model is not one that has been developed unilaterally by the State. Institutional participation in its development and ongoing improvement always has been encouraged by the Ohio Board of Regents. As a result, the model and its use are well supported by the state universities.

A major problem with the RAP model is its limitation to Instructional and General expenditures. Research, Public Service, Auxiliary and Student Aid costs are excluded because the sole purpose of the model is to develop a budget formula for Instructional and General expenditures. Separate appropriations are made by Legislature for Research, Public Service, Auxiliary and Student Aid programs. Another problem with RAP relates to faculty effort reporting. Annual costs are based on effort reported for the Fall and Summer Quarters only. In addition, discrepancies result in the calculation of the cost of medical programs because of inconsistencies in the way institutions report faculty effort for patient care and house staff instruction.

AAMC/Medical Center Cost Study. Of the three models described herein, the AAMC model is the best from a methodological point of view. While

its application has been limited to medical centers, this model allows for the use of a meaningful program structure, it recognizes joint costs and costs external to the institution and it utilizes sophisticated and meaningful techniques for allocating indirect costs. More importantly, it provides a way of matching income and expense on a program basis, thereby providing a means for determining program profitability.

The major shortcoming of the AAMC model is the overemphasis of joint costs. Final results usually include a redistribution of costs based on the premise that some portion of research supports instruction and some of the instructional costs are really patient care costs. Unfortunately, there is little objective evidence to support these reallocations, and as a result, final cost figures become distorted and misleading.

Recommendations

When ranking the criteria to be used in evaluating a state educational model, "confidence in the accuracy of the results" was cited as the most important criterion.[1] How, then, can confidence in the accuracy of results of cost models be improved? Four major recommendations are offered.

1. Stop the Proliferation of Cost Models. Too many cost models are being developed. While only three models are discussed in this paper, many others exist. The Institute of Medicine published a study which reported the annual costs of educating a medical student to be $4,000 less than that published by the AAMC. Obviously, the prescribed methodology was different. Institutions and state agencies themselves contribute to the confusion by

[1] Newsletter, Educational Science Section, Operations Research Society of America. "Criteria For Evaluating State Educational Models" by Vaughn Huckfeldt, NCHEMS, pp. 8-9. Spring, 1976 Issue.

developing their own cost models. All too often planning models are used as substitutes for cost models. Many of the proprietary planning models being marketed today fall into this category. So long as the proliferation of cost models continues, credibility always will be lacking about the costs of higher education.

2. Agree on One Set of Conventions and Adopt One Cost Model for Nationwide Use. This objective will be difficult to achieve as long as there is a lack of consensus among institutions of higher education on the question of what is the "right" cost model. A cost model most likely will be imposed on higher education by the Federal government before the institutions themselves can agree on a standardized cost methodology. One would like to think NCHEMS is leading the way on with IEP, but the constant bickering among the large institutions over methodology and the failure of NCHEMS to address the health sciences area, may well lead to the demise of IEP.

3. Separate Politics from Cost Methodology. The reason why people cannot come together on a uniform cost model has its roots in the political sensitivity of so many issues involved in cost finding. Four issues are paramount.

   a. Faculty Activity Analysis. Faculty effort reporting is the foundation of any cost study. The accuracy of the results is highly dependent on how well the faculty report their effort. We all know that faculty effort reporting leaves a great deal to be desired. Not only are the results questionable, but also faculty are extremely reluctant to participate in any program where they must be accountable

for how they spend their time.

b. Departmental Research. This is defined as time spent by faculty on unsponsored and/or unorganized research. It usually is lumped together with and considered a part of Departmental Instruction. However, Departmental Research is a significant part of a research-oriented institution's instructional expense base. There are obvious undesirable consequences which could result if state legislatures knew to what extent they have been funding departmental research as a hidden cost of instruction. Existing cost models have a tendency to disguise the "real" costs of research.

c. Joint Costs. It is common knowledge that joint costs exist, but very little is done to measure them. What is being referred to is the premise that research supports instruction and vice versa. The AAMC cost model is the only model of the three described herein which addresses this problem. Unfortunately, some look upon the techniques prescribed by the AAMC for reallocating joint costs as nothing more than a political scheme for forcing the costs to come out in some predetermined manner.

d. Public vs. Private Funding. The other side of the public-private issue is full disclosure versus secrecy. Public institutions are obliged to disclose their costs whereas a private institution can afford to be a little more secretive. Other than to satisfy internal management needs, there is little motivation for a private institution to adopt a rigid set of national conventions for determining program costs

and even less motivation to publish their results.

4. Put More Emphasis on Future Planning than on Historical Cost Analysis. In these troubled times, institutions should devote more of their time and scarce resources to the development of future plans that will allow them to survive. Historical cost analysis is of little value unless it can be used to accurately predict what will happen in the future. For example, who cares if it costs $14 per credit hour to teach lower division English in 1976 when one is not sure if there will be enough students or money to open the doors in 1986. Historical cost analysis might be fun and interesting, but if it is done at the expense of future planning, it could spell disaster.

Conclusion

As long as there are so many different cost models, there is little chance anyone will understand the costs of higher education. There needs to be much more cooperation than there is now among the national associations, state agencies and institutions when undertaking cost studies and developing standardized cost methodologies. Somehow, too, the leaders in higher education must come together and champion a united course of action.

Institutional researchers can help. Not only must they become involved in cost study methodology on their own campuses, but they must educate their top administrative officers about the importance of cost finding principles. Involvement in cost studies now could mean survival in the future.

NCHEMS IEP
5-30-75

EXHIBIT A-1

UNIVERSITY OF CINCINNATI

COLLEGE DIRECT AND FULL COSTS

1973-74

Discipline (College)	Quarter Credit Hour Cost By Course Level					
	Lower Division		Upper Division		Graduate	
	Direct	Full	Direct	Full	Direct	Full
Arts and Sciences	$14.45	$28.10	$27.14	$ 46.03	$ 62.60	$110.00
Business Administration	8.68	16.92	14.67	27.57	40.82	73.34
Education	16.92	33.29	13.79	23.86	25.02	39.84
Engineering	17.92	33.61	35.84	88.14	113.35	278.47
Design, Architecture and Art	19.71	33.90	35.73	58.90	60.81	96.87
College Conservatory of Music	10.67	32.54	58.49	158.61	42.04	112.65
Law	-	-	-	-	25.59	63.29
Medicine	-	-	-	-	99.58	153.39
Nursing	39.77	83.66	78.19	162.04	94.90	196.01
Pharmacy	20.13	34.43	30.87	51.38	75.05	121.16
Graduate Community Planning	-	-	-	-	41.26	59.94
University College	9.56	17.31	-	-	-	-
Community Services	-	-	15.02	25.69	26.64	42.75
Ohio College of Applied Science	15.62	25.16	-	-	-	-
Total University	13.05	24.71	23.48	45.31	54.16	97.97

NCHEMS IEP
5-30-75

EXHIBIT A-2

UNIVERSITY OF CINCINNATI

STUDENT MAJOR DIRECT COSTS

1973-74

A. TEN HIGHEST COST PROGRAMS (BASED ON PROGRAMS WITH GREATER THAN 500 CREDIT HOURS)

PROGRAM/QUARTER CREDIT HOUR COST BY STUDENT LEVEL

	Lower Division		Upper Division		Masters		Doctoral	
1.	Chemical Tech.	$29.57	Physics	$82.15	Chemical Engg.	$139.55	Chemical Engg.	$148.68
2.	Geology	$27.95	Geology	$75.13	Physics	$123.85	Aerospace Engg.	$122.92
3.	Physics	$26.66	Aerospace Engg.	$51.93	Geology	$118.38	Classics	$121.85
4.	Music Theory	$25.61	Voice	$44.67	Aerospace Engg.	$103.29	Geology	$119.65
5.	Law	$25.59	Orchestral Instr.	$42.90	Electrical Engg.	$ 92.85	Physics	$110.83
6.	Music Composition	$25.58	Industrial Design	$42.49	Biology	$ 85.29	Electrical Engg.	$110.45
7.	Industrial Design	$22.47	Piano	$41.97	Mechanical Engg.	$ 84.80	Medicine	$101.49
8.	Fine Arts	$22.10	Philosophy	$38.93	Civil & Env. Engg.	$ 81.30	Mechanical Engg.	$ 94.78
9.	Philosophy	$21.80	Musical Theater	$38.25	Environ. Health	$ 79.77	Civil & Env. Engg.	$ 88.10
10.	Child Care	$21.46	Art Teacher Educ.	$37.84	Chemistry	$ 77.09	Microbiology	$ 77.32

B. TEN LOWEST COST PROGRAMS (BASED ON PROGRAMS WITH GREATER THAN 500 CREDIT HOURS AND EXCLUDING EVENING, SUMMER AND TWO-YEAR PROGRAMS)

PROGRAM/QUARTER CREDIT HOUR COST BY STUDENT LEVEL

	Lower Division		Upper Division		Masters		Doctoral	
1.	Business Educ.	$10.46	Business Educ.	$ 9.53	Vocational Educ.	$16.73	Vocational Educ.	$16.02
2.	Child Development	$11.66	Child Development	$10.64	Spec. School Educ.	$18.11	Secondary Educ.	$22.66
3.	Accounting	$12.05	Special Educ.	$13.76	Elementary Educ.	$18.35	Elementary Educ.	$22.85
4.	Marketing	$12.14	Accounting	$14.07	Rehabilitation	$19.10	Educational Admin.	$25.21
5.	Finance	$12.50	Urban Affairs	$14.25	Accounting	$21.51	Law	$25.59
6.	Elementary Educ.	$12.57	Industrial Mgt.	$14.52	Special Reading	$22.04	Political Science	$27.58
7.	Bus. & Commerce	$12.60	Bus. & Commerce	$14.68	Secondary Educ.	$22.24	Rehabilitation	$28.65
8.	Management	$12.63	Criminal Justice	$14.80	Community Health	$23.16	Spec. School Educ.	$29.62
9.	Quantitative Anal.	$12.79	Management	$14.91	Educational Admin.	$23.75	Communith Health	$29.62
10.	Special Educ.	$12.90	Laboratory Med.	$15.07	Special Educ.	$24.60	Special Educ.	$30.65

NCHEMS IEP
5-30-75

EXHIBIT A-3

UNIVERSITY OF CINCINNATI

STUDENT MAJOR FULL COSTS

1973-74

A. TEN HIGHEST COST PROGRAMS (BASED ON PROGRAMS WITH GREATER THAN 500 CREDIT HOURS)

PROGRAM/QUARTER CREDIT HOUR COST BY STUDENT LEVEL

	Lower Division		Upper Division		Masters		Doctoral	
1.	Music Theory	$60.67	Aerospace Engg.	$149.35	Chemical Engg.	$374.82	Chemical Engg.	$413.97
2.	Music Composition	$58.97	Physics	$134.65	Aerospace Engg.	$286.57	Aerospace Engg.	$341.72
3.	Ballet	$58.61	Geology	$118.91	Chemistry	$262.05	Electrical Engg.	$259.21
4.	Geology	$51.25	Voice	$112.28	Electrical Engg.	$223.20	Chemistry	$207.27
5.	Music Education	$50.67	Orchestral Instr.	$106.35	Physics	$200.97	Mechanical Engg.	$203.12
6.	Musical Theater	$48.75	Piano	$104.11	Mechanical Engg.	$195.82	Geology	$183.93
7.	Physics	$47.65	Musical Theater	$ 97.96	Geology	$186.65	Physics	$181.30
8.	Aerospace Engg.	$46.93	Chemical Engg.	$ 93.34	Biological Sci.	$179.96	Classics	$164.92
9.	Orchestral Instr.	$46.44	Broadcasting	$ 91.00	Environ. Health	$160.35	Biological Sci.	$163.45
10.	Voice	$45.63	Musical Education	$ 89.69	Civil & Env. Engg.	$141.35	Environ. Health	$155.62

B. TEN LOWEST COST PROGRAMS (BASED ON PROGRAMS WITH GREATER THAN 500 CREDIT HOURS AND EXCLUDING EVENING, SUMMER AND TWO-YEAR PROGRAMS)

PROGRAM/QUARTER CREDIT HOUR COST BY STUDENT LEVEL

	Lower Division		Upper Division		Masters		Doctoral	
1.	Business Educ.	$18.60	Business Educ.	$17.17	Vocational Educ.	$26.22	Vocational Educ.	$25.19
2.	Accounting	$21.38	Child Development	$19.31	Spec. School Educ.	$27.72	Elementary Educ.	$35.20
3.	Child Development	$21.53	Special Educ.	$23.66	Elementary Educ.	$29.57	Secondary Educ.	$35.95
4.	Marketing	$21.73	Urban Affairs	$24.56	Rehabilitation	$31.30	Educational Admin.	$40.03
5.	Finance	$22.13	Elementary Educ.	$25.41	Secondary Educ.	$35.01	Spec. School Educ.	$45.07
6.	Bus. & Commerce	$22.17	Criminal Justice	$25.49	Special Reading	$35.18	English Literature	$47.15
7.	Quantitative Anal.	$22.22	Vocational Educ.	$25.68	Educational Admin.	$37.35	Special Educ.	$47.22
8.	Elementary Educ.	$22.31	Accounting	$25.73	Community Health	$38.47	Political Science	$47.39
9.	Management	$22.43	Psychology	$26.14	Special Educ.	$38.91	Rehabilitation	$47.43
10.	Special Educ.	$22.77	Bus. & Commerce	$26.64	Accounting	$38.65	History	$51.73

EXHIBIT B-1

EXPENDITURE AND RESOURCE REQUIREMENTS

FOR 100 FTE STUDENTS

OHIO BOARD OF REGENTS RAP

DATE: 05/03/75

LEVEL: ALL PROGRAMS - ALL LEVELS

PROGRAM: SEE ABOVE.PAGE

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10 CINCI	#11	#12	TOTAL
EPARTMENTAL INSTRUCTION													
FACULTY SALARIES	98503	122714	78595	99113	84635	130174	120033	97184	90093	129123	108515	69982	1077
OTHER STAFF	19110	8743	26088	23545	9283	13472	21351	15543	17736	28424	17482	23940	2639
OTHER EXPENSES	10569	14639	13448	9759	14522	26601	11056	14071	9962	17025	8749	4639	1577
NSTRUCTIONAL SERVICES	8150	4951	9779	7646	6351	4173	7543	10590	10763	1695	8368	6172	6427
IBRARIES	9222	12593	13475	10425	10893	10972	13223	13890	10485	9399	11413	7987	1037
TUDENT SERVICES	11947	47197	16235	11079	13305	9299	18672	16670	12532	12931	9985	11027	1281
NERAL EXPENSE	9423	27240	8966	11469	9424	14454	8989	11136	7922	8352	7510	11504	1076
DMINISTRATION	13032	37949	11605	10913	7319	2325	12558	15994	11073	12229	10508	13209	9646
LANT	25033	52946	42044	25784	29722	37124	41167	28143	22965	32710	23535	27098	3117
SUB-TOTAL	205992	328884	220405	209739	185458	278599	254626	223225	193534	252692	206100	177593	2332
UBLIC SERVICE*	1506	0	784	733	592	4831	832	1810	4302	648	1580	2334	2444
ESEARCH*	806	0	879	668	782	3468	2103	0	2466	5641	0	0	2114
TUDENT AID*	7242	16838	850	1942	1901	2963	4773	569	935	1943	2843	0	2
UXILIARY SERVICE*	13711	19422	6600	12939	14609	11544	11657	8626	6947	7695	9216	8439	1043
TOTAL	229890	365144	229099	226024	203325	301407	273994	234032	208187	268622	219741	186407	2493
ACULTY / 100 STUDENTS	5.81	6.46	4.68	6.07	5.85	8.32	6.74	5.85	5.84	6.40	5.32	5.76	6.3
DEAN + DEPT. CHAIRMAN	.32	1.99	.39	.48	.42	.41	.50	.63	.39	.97	.76	.65	.54
PROFESSORS	1.12	.06	.55	1.33	.82	1.68	1.43	.43	.52	1.00	.85	.36	1.0
ASSOC. PROFESSORS	1.12	.52	1.38	1.36	1.18	1.27	1.80	1.22	1.27	1.19	1.17	1.29	1.28
ASST. PROFESSORS	1.52	1.93	1.37	1.49	1.36	1.50	1.48	1.60	1.82	1.79	1.39	1.34	1.5
INSTRUCTORS	.61	2.04	.36	.37	.76	.69	.65	.86	.58	.81	.43	.47	.44
GRADUATE ASST.	.98	.00	.01	.69	1.04	2.56	.69	.52	.20	.19	.64	.04	1.0
OTHER	.11	.00	.59	.32	.23	.18	.15	.55	1.03	.42	.05	1.09	.37
CTUAL FACULTY	964.45	138.27	628.44	1160.18	936.49	4296.57	934.54	540.46	936.65	1701.33	683.16	658.53	13578.70
CTUAL ENROLLMENT	16568	2138	13409	19099	15994	51636	13857	9235	16030	26552	12836	11418	208
LOWER DIVISION UNDERGRAD	8310	1268	5350	8850	9220	23168	6139	5015	8808	14235	7174	6753	104
UPPER DIVISION UNDERGRAD	6795	874	6033	7594	5620	17048	6104	3033	5352	7991	3501	4043	7394
MASTERS CANDIDATES	1163	0	1063	1805	944	4136	1255	1168	1246	2303	1165	627	17
PHD CANDIDATES	310	0	12	759	193	2809	340	0	156	830	245	0	5
PROFESSIONAL G ADUATES	0	0	936	0	0	4446	0	0	465	986	729	0	7
CTUAL SPACE (100 SQ.FT.)	4530	519	2837	2506	2008	10502	3377	1373	2508	4092	2347	1830	3264
PACE / 100 STUDENTS	2813	2627	2203	1415	1360	2148	2513	1582	1747	1659	1903	1776	195
CLASSROOM	1014	1186	934	850	764	755	1196	830	772	954	1401	771	93
LABORATORY	517	583	796	565	490	756	546	426	708	534	398	485	60
OTHER	1281	858	472	0	75	636	771	325	266	171	103	519	44

ransfer of Funds Available for I & G

EXHIBIT B-2

EXPENDITURE AND RESOURCE REQUIREMENTS

FOR 100 FTE STUDENTS

OHIO BOARD OF REGENTS RAP

DATE: 05/03/75

LEVEL: BACCALAUREATE

PROGRAM: ENGLISH

	01	02	03	04	05	06	07	08	09	010 CINCI	011	012	TOTAL
PARTMENTAL INSTRUCTION													
FACULTY SALARIES	124920	76627	109373	95733	98836	104698	150741	84695	195469	119163	158888	189872	118737
OTHER STAFF	16932	472	15733	35411	6363	10306	12918	10219	7644	13231	13020	33976	15723
OTHER EXPENSES	4265	2754	9321	6407	11376	3945	3517	4650	12145	4009	2427	7764	5534
STRUCTIONAL SERVICES	9035	4265	13713	9111	7670	3265	9473	8476	20134	9859	13000	15479	7749
RARIES	8457	12598	11869	9149	10126	8953	11860	12227	9358	8147	9742	7538	9628
UDENT SERVICES	12526	48781	17576	11842	13709	10464	19842	17683	13309	14023	10873	11333	12985
NERAL EXPENSE	9423	27249	8965	11479	9424	14454	8989	11136	7922	8352	7510	11506	11002
MINISTRATION	15002	32712	16280	13004	8639	1820	15809	12602	20713	13402	16325	33127	12235
NT	20342	33905	43650	25289	31896	26019	40602	21880	29251	28950	24678	44066	29243
SUB-TOTAL	220906	239367	246484	217421	198233	183928	273755	183770	315940	211141	256467	354666	223840
BLIC SERVICE *	1670	0	1100	873	715	3780	1045	1200	8049	710	2455	5980	2136
SEARCH *	927	0	531	797	921	2714	2642	0	4613	6183	0	0	2228
UDENT AID *	7242	16833	850	1942	1902	2963	4773	5 9	936	1943	2843	0	3015
XILIARY SERVICE *	13712	19421	6600	12939	14609	11544	11657	8626	6947	7695	9216	6440	11091
TOTAL	244458	275627	255567	233974	216381	204931	293875	194256	336486	227675	270982	367086	242103
CULTY / 100 STUDENTS	6.30	5.25	6.63	7.22	6.97	7.06	8.20	4.72	10.27	7.78	8.65	12.89	7.41
EAN + DEPT. CHAIRMAN	.03	1.34	.57	.01	.21	.13	.19	.13	.81	.45	1.04	.22	.24
PROFESSORS	1.46	.00	.58	1.85	1.11	.84	2.08	1.05	.57	1.06	1.71	1.36	1.24
ASSOC. PROFESSORS	1.52	.7	2.59	1.87	1.69	1.32	2.00	.99	2.00	.81	1.69	4.09	1.74
ASST. PROFESSORS	2.23	3.03	2.04	2.56	2.52	1.64	2.30	1.40	5.87	3.70	2.46	5.18	2.51
INSTRUCTORS	.71	.00	.75	.00	1.04	1.13	.09	.84	.90	1.58	1.62	1.92	.84
GRADUATE ASST.	.33	.00	.00	.27	.22	1.77	.52	.00	.00	.01	.11	.00	.55
OTHER	.00	.00	.07	.63	.15	.19	.00	.28	.11	.14	.00	.10	.17
TUAL FACULTY	24.52	2.69	11.48	38.02	23.56	63.84	35.43	11.14	12.54	32.54	12.91	21.27	289.60
TUAL ENROLLMENT	389	55	173	526	338	904	432	236	122	418	149	165	3907
LOWER DIVISION UNDERGRAD	111	25	45	235	139	387	113	93	42	224	74	68	1556
UPPER DIVISION UNDERGRAD	278	32	127	288	195	517	319	140	80	191	74	96	2337
MASTERS CANDIDATES	1	0	1	0	3	1	0	2	0	3	1	2	14
PHD CANDIDATES	0	0	0	0	0	0	0	0	0	1	0	0	1
PROFESSIONAL GRADUATES	0	0	0	0	0	0	0	0	0	0	0	0	0
TUAL SPACE (100 SQ.FT.)	36	6	15	49	39	89	66	22	15	26	19	17	402
ACE / 100 STUDENTS	968	1198	965	984	1197	1103	1593	1048	1411	700	1355	1230	1110
CLASSROOM	894	920	901	984	1197	997	1401	966	1217	694	1355	1124	1033
LABORATORY	0	0	0	0	0	12	0	0	0	0	0	0	2
OTHER	74	278	64	0	0	99	191	81	194	6	0	105	74

*Transfer of Funds Available for I & G

EXHIBIT C-1

UNIVERSITY OF CINCINNATI
MEDICAL CENTER COST STUDY 1970-71 DATE: 01-18-73
SCHEDULE V
CONSOLIDATED MEDICAL CENTER PROGRAM COSTS & INCOME SUMMARY WITHOUT INTERFUNCTIONAL ADJUSTMENTS
($ ROUNDED -- ADD 000; % ROUNDED)

UNIVERSITY OF CINCINNATI PROGRAMS	<-UNIVERSITY OF CINCINNATI MEDICAL CENTER COSTS BY UNIT--> COLLEGE A $ AMT	%	COLLEGE B $ AMT	%	COLLEGE C $ AMT	%	HOSPITAL 1 $ AMT	%	HOSPITAL 2 $ AMT	%	MEDICAL CENTER TOTAL COSTS $ AMT	MEDICAL CENTER TOTAL INCOME $ AMT	COSTS UNDER (OVER=) INCOME $ AMT	OUTSIDE CONTRIBUTIONS AFFIL. UNITS $ AMT	MEMO SUM. $ AMT	TOTAL COSTS $ AMT
INSTRUCTIONAL																
DEGREE CREDIT																
UNDERGRAD MEDICAL	1,454	73					545	27			1,999	1,464	-535	218	367	2,584
UNDERGRAD NURSING	36	4	675	79			148	17			859	711	-148	117	353	1,329
UNDERGRAD PHARMACY	5	1	8	2	388	89	31	7	4	1	436	401	-35	18	235	689
GRADUATE MEDICAL	1,403	100					4				1,407	1,403	-4	66	18	1,491
GRADUATE NURSING	1		215	94			12	6			228	216	-12		50	278
GRADUATE PHARMACY	2	2			50	62	29	36			81	52	-29		19	100
OTHER ALLIED HEALTH	175	39					270	61			445	175	-270	5		450
OTHER NON-MEDICAL	150	52					138	48			288	150	-138	24		312
SUB-TOTAL DEGREE	3,226	56	858	16	438	8	1,177	20	4		5,743	4,572	-1,171	448	1,042	7,233
NON-DEGREE CREDIT																
INTERNS & RESIDENTS	2,017	70	2				855	30	8		2,882	2,034	-848	1,131	345	4,358
POST DOCTORAL MEDICAL	489	99					3	1			492	489	-3	4	39	535
CONTINUING ED MEDICAL	238	92					20	8			258	238	-20	17	12	287
CONTINUING ED NURSING	2	2	77	92			5	6			84	79	-5			84
CONTINUING ED PHARMACY					18	100					18	18		10		28
OTHER	50	20			1		194	80			245	51	-194	5	11	261
SUB-TOTAL NON-DEGREE	2,796	70	79	2	19		1,077	28	8		3,979	2,909	-1,070	1,167	407	5,553
TOTAL INSTRUCTION	6,022	62	937	10	457	5	2,254	23	12		9,722	7,481	-2,241	1,615	1,449	12,786
RESEARCH																
SEPARATE BUDGET	4,782	89	1		47	1	546	10			5,376	4,835	-541	1,242	203	6,821
ALL OTHER	1,363	93	13	1	78	5	19	1			1,473	1,454	-19	125	12	1,611
TOTAL RESEARCH	6,145	90	14		125	2	565	8			6,849	6,289	-560	1,367	215	8,431
PATIENT SERVICES																
CINTI GENERAL	1,909	9	25		50		19,273	91	40		21,297	21,744	447	196	142	21,635
CLMES	521	13	2				7		3,595	87	4,135	4,012	-123	6	406	4,547
ALL OTHER	906	96	22	2			19	2			947	928	-19	8,058	322	9,307
TOTAL PATIENT SERVICES	3,346	13	49		50		19,299	73	3,635	14	26,379	26,684	305	8,260	870	35,509
PROF PUBLIC SERVICE	649	71	39	4	16	2	206	23			910	704	-206	94	30	1,034
TOTAL COSTS	16,162	37	1,079	2	648	1	22,324	51	3,647	9	43,860			11,336	2,564	57,760
TOTAL INCOME	16,162		1,079		648		19,790		3,479			41,158				
TOTAL COSTS UNDER (OVER=) TOTAL INCOME							-2,534		-168				-2,702			

EXHIBIT C-2
UNIVERSITY OF CINCINNATI
MEDICAL CENTER COST STUDY 1970-71 DATE: 01-18-73
SCHEDULE VI
MEDICAL CENTER PROGRAM COSTS PER STUDENT WITHOUT INTERFUNCTIONAL ADJUSTMENTS

UNIVERSITY OF CINCINNATI INSTRUCTIONAL PROGRAMS	NUMBER OF STUDENTS	COSTS PER STUDENT BY UNIT: COLLEGE A	COLLEGE B	COLLEGE C	HOSPITAL 1	HOSPITAL 2	MEDICAL CENTER TOTAL COSTS	OUTSIDE CONTRIBUTIONS: AFFIL. UNITS	MEMO SUMMARY	TOTAL COSTS PER STUDENT
UNDERGRAD MEDICAL	427	$ 3,404	$ 0	$ 0	$ 1,277	$ 0	$ 4,683	$ 511	$ 859	$ 6,053
UNDERGRAD NURSING	383	$ 94	$ 1,763	$ 0	$ 387	$ 0	$ 2,246	$ 306	$ 922	$ 3,474
UNDERGRAD PHARMACY	289	$ 19	$ 29	$ 1,343	$ 108	$ 13	$ 1,513	$ 62	$ 814	$ 2,389
GRADUATE MEDICAL	109	$ 12,872	$ 0	$ 0	$ 39	$ 0	$ 12,913	$ 603	$ 166	$ 13,682
GRADUATE NURSING	28	$ 46	$ 7,682	$ 0	$ 421	$ 0	$ 8,151	$ 0	$ 1,786	$ 9,937
GRADUATE PHARMACY	20	$ 124	$ 0	$ 2,517	$ 1,430	$ 0	$ 4,077	$ 0	$ 941	$ 5,018
OTHER ALLIED HEALTH	57	$ 3,071	$ 0	$ 1	$ 4,738	$ 0	$ 7,912	$ 83	$ 0	$ 7,995
OTHER DEGREE CREDIT	38	$ 3,953	$ 0	$ 0	$ 3,635	$ 0	$ 7,590	$ 627	$ 8	$ 8,225
INTERNS & RESIDENTS	399	$ 5,056	$ 5	$ 0	$ 2,143	$ 19	$ 7,225	$ 2,833	$ 865	$ 10,923
POST DOCTORAL MEDICAL	96	$ 5,090	$ 0	$ 0	$ 33	$ 0	$ 5,125	$ 44	$ 404	$ 5,573
CONTINUING ED MEDICAL	2,152	$ 111	$ 0	$ 0	$ 9	$ 0	$ 122	$ 8	$ 6	$ 136
CONTINUING ED NURSING	1,127	$ 2	$ 68	$ 0	$ 5	$ 0	$ 77	$ 0	$ 0	$ 77
CONTINUING ED PHARMACY	180	$ 0	$ 0	$ 98	$ 0	$ 0	$ 100	$ 58	$ 0	$ 158
OTHER NONDEGREE CREDIT	33	$ 1,527	$ 0	$ 24	$ 5,866	$ 0	$ 7,419	$ 143	$ 322	$ 7,884

EXHIBIT D
MAJOR DIFFERENCES AMONG THREE COST MODELS

	IEP	RAP	AAMC
1. OUTPUT:	EXPRESSED AS DISCIPLINE AND STUDENT MAJOR COSTS PER STUDENT CREDIT HOUR	EXPRESSED AS DISCIPLINE COSTS PER FTE STUDENT	EXPRESSED IN TERMS OF PROGRAM COSTS/ INCOME AND COST PER STUDENT
2. PROGRAM CLASSIFICATION STRUCTURE:	UTILIZES HEGIS DISCIPLINES	UTILIZES OHIO BOARD OF REGENTS DISCIPLINES	SELF-DETERMINED
3. FINANCIAL DATA:	ALL FINANCIAL DATA, INCLUDING CAPITAL COSTS	I & G ONLY	ALL FINANCIAL DATA INCLUDING ESTIMATES OF COSTS EXTERNAL TO THE INSTITUTION
4. ALLOCATION OF FACULTY EFFORT:	ALLOCATION BASED ON PROGRAM CLASSIFICATION STRUCTURE	ALL EFFORT APPORTIONED TO INSTRUCTION. ONLY FALL AND SUMMER EFFORT USED	EFFORT ALLOCATED BASED ON PROGRAM CLASSIFICATION STRUCTURE
5. ALLOCATION OF INDIRECT COSTS:	VARIOUS PARAMETERS	USE OF INDICES	SELF-DETERMINED BUT EXPECTED TO FOLLOW CIRCULAR A-21
6. JOINT COSTS:	NO CONSIDERATION	NO CONSIDERATION	USE OF INTER-FUNCTIONAL TRANSFER